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Start date
Oct 4, 1994
Jan 2, 1995

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

IN THE MATTER OF:

INDUSTRIAL SERVICE CORPORATION
1633 South Marsh
Blue Summit, Missouri 64126
EPA I.D. MOD073027609

Respondent

Proceeding under Section 3008(h)
of the Resource Conservation
and Recovery Act, as amended,
42 U.S.C. § 6928(h).

Docket No. VII-94-H-0024

158K- RPL

ADMINISTRATIVE ORDER ON CONSENT
FOR CORRECTIVE ACTION

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ATTACHMENT I - SITE MAP

ATTACHMENT II - RFI SCOPE OF WORK

ATTACHMENT III - CMS SCOPE OF WORK

I. JURISDICTION

1. This Administrative Order on Consent ("Order") is entered into voluntarily by Industrial Service Corporation, ("ISC" or "Respondent") and the United States Environmental Protection Agency ("EPA") pursuant to Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments ("RCRA") 42 U.S.C. § 6928(h). EPA's authority to enter into this Order is vested in the Administrator under Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), and has been delegated to the Regional Administrators by EPA Delegations No. 8-31 and No. 8-32 dated March 6, 1986. On May 16, 1988, the authorities delegated in delegations No. 8-31 and No. 8-32 were further delegated to the Director of the Waste Management Division, Region VII, by EPA Delegation No. R7-8-31 and R7-8-32.

2. Respondent is the owner/operator of a facility located at 1633 South Marsh in Blue Summit, Missouri, an unincorporated area adjacent to Kansas City, Missouri ("Facility" or "Site") (See Attachment I). Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Order or to enforce its terms. Respondent also agrees not to contest, and waives any defense concerning the validity of this Order, or any particular provision contained in this Order.

II. DEFINITIONS

3. Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations

promulgated under RCRA shall have the meaning assigned to them under RCRA or in such regulations.

a. Order shall mean this Administrative Order on Consent for Corrective Action and all appendices attached hereto. In the event of conflict between this Order and any provision of any other agreement, order or writing, the terms and conditions of this Order shall control.

b. Day shall mean a calendar day unless expressly stated to be a business day. Business Day shall mean a day other than a Saturday, Sunday or federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday or federal holiday, the period shall run until the end of the next business day.

c. Field Work shall mean all investigative and evaluation activities required to be performed by Respondent under any workplan approved by EPA under this Order.

d. Hazardous Constituents shall mean those constituents listed in Appendix VIII to 40 C.F.R. Part 261 or any constituent identified in Appendix IX to 40 C.F.R. Part 264.

e. Hazardous Waste shall mean hazardous waste as defined in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5) or 40 C.F.R. § 260.10.

f. MDNR shall mean the Missouri Department of Natural Resources.

g. On-site shall mean the Facility property or geographically contiguous property which may be divided by public or private right-of-way within the boundary of the Facility.

h. Paragraph shall mean a portion of this Order identified by an Arabic numeral, a letter of the alphabet or a lower case Roman numeral.

i. Parties shall mean the United States and Respondent.

j. Section shall mean a portion of this Order identified by an upper case Roman numeral and includes one or more paragraphs, unless used to refer to a statutory or regulatory section.

k. Scope of Work ("SOW") shall mean the outline of work Respondent must use to develop all workplans and reports required by this Order as set forth in this Order and its Attachments. All SOW Attachments and modifications or amendments thereto are incorporated into and are an enforceable part of this Order.

l. Work shall mean any activity Respondent must perform to comply with the terms and conditions or requirements of this Order and its attachments.

m. Workplan shall mean the detailed plans prepared by Respondent to satisfy the requirements of the corresponding Scope of Work. The required elements of each workplan are presented in Section VII (Work to be Performed) and in Attachments II & III.

n. United States shall mean the United States of America, and any and all agencies and instrumentalities thereof.

III. STATEMENT OF PURPOSE

4. In accordance with the terms and conditions of this Order and the Scopes of Work (Attachments II & III), Respondent agrees to:

a. Perform any interim measures ("IM") at the Facility that EPA determines are necessary to control or abate threats to human health or the environment, or to prevent or minimize the spread of hazardous waste or hazardous constituents while long-term corrective measures are being evaluated;

b. Perform a RCRA Facility Investigation ("RFI") to determine fully the nature and extent of any release of hazardous waste or hazardous constituents at or from the Facility;

c. Perform a Corrective Measures Study ("CMS") to identify and evaluate alternatives for the corrective action necessary to prevent, mitigate or remediate any releases of hazardous wastes or hazardous constituents at or from the Facility; and,

d. Perform any other activities necessary to correct or evaluate actual or potential threats to human health or the environment resulting from the release or potential release of hazardous waste or hazardous constituents at or from the Facility.

5. EPA will select a corrective measure upon Respondent's completion of the requirements of this Order. EPA's selection of

a corrective measure is subject to public comment.

IV. PARTIES BOUND

6. This Order shall apply to and be binding upon EPA and Respondent and its agents, successors and assigns.

7. Respondent shall be responsible and liable for any failure to carry out all activities required of Respondent pursuant to this Order, regardless of Respondent's use of employees, agents, contractors, or consultants to perform any such activities.

8. No change in ownership or corporate or partnership status relating to the Facility, or a portion of the Facility, will in any way alter Respondent's responsibility under this Order. Any conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall not affect Respondent's obligations under this Order. Respondent shall give written notice of this Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify EPA within at least thirty (30) days prior to such transfer.

9. Respondent shall provide a copy of this Order to all contractors, laboratories and consultants retained to conduct or monitor any portion of the work performed pursuant to this Order within seven (7) days of the effective date of this Order or the retention of such contractors, laboratories or consultants, whichever occurs later, and shall condition all such contracts on compliance with the terms of this Order.

10. Respondent agrees to undertake all actions required by the terms and conditions of this Order including any portions of this Order incorporated by reference. Respondent waives any rights to request a hearing on this matter and consents to the issuance of this Order without a hearing pursuant to Section 3008(b) of RCRA and 40 C.F.R. Part 24.

V. FINDINGS OF FACT

11. Respondent, a Missouri corporation, has been engaged in the business of collecting, transporting and reprocessing waste oil and hazardous wastes at its Facility located at 1633 South Marsh, Blue Summit, Missouri, an unincorporated area adjacent to Kansas City, Missouri.

12. Respondent owns and operates the Facility, which is bounded on the south by a residential area, on the west by Marsh Street, and on the east by a bluff, on the other side of which is a former solid waste landfill. A light industrial facility is located adjacent to the north side of the Facility. The legal description of the Facility property is as follows:

All of Lots 20 through 39, Block 11, Resurvey of Stark Acres, all in Section 6, T49N, R32W, Jackson County, Missouri; and a tract of land located in the northwest 1/4 of the northeast 1/4 of Section 7, T49N, R32W described as follows:

Lots 12 through 19, Block 3, Pittsburg Addition, Jackson County, Missouri.

13. Respondent began operating the Facility under the name and corporate identity of Radium Petroleum, Inc. ("Radium") in

1973, when the Facility was purchased by Radium from Sam Hewett, who began oil reclamation at the Site in 1958. On or about January 29, 1988, Radium's name was changed to Industrial Service Corporation.

14. Respondent filed a notification with EPA pursuant to Section 3010(a) of RCRA, 42 U.S.C. § 6930(a) on or about August 13, 1980, and was issued EPA ID Number MOD073027609. Respondent notified EPA that it transported and treated, stored, or disposed of characteristic hazardous wastes as defined at 40 C.F.R. § 261.21 through 261.24 having the hazardous waste codes D001 (ignitable) and D002 (corrosive).

15. On or about November 18, 1980, pursuant to Section 3005 of RCRA, 42 U.S.C. § 6930, Respondent filed its original Part A application indicating that it stored and processed waste oil in tanks. Respondent reported the hazardous wastes managed at the Facility as K048, K049, K051, K052, D008, and D001.

16. By submitting a timely notification and a Part A application for a permit, Respondent achieved interim status as a treatment, storage, and disposal facility for the hazardous wastes identified in accordance with Section 3005(e) of RCRA, 42 U.S.C. § 6925(e).

17. On or about September 16, 1982, Respondent submitted a revised Part A application for a permit for storage in tanks and treatment in tanks of the following hazardous wastes:

a. Hazardous wastes from specific sources as defined at 40 C.F.R. § 261.32, having the hazardous waste codes K048,

K049, K051, K052, F001, F002, F003, and F005.

b. Characteristic hazardous wastes as defined at 40 C.F.R. §§ 261.21 through 261.24 having the hazardous waste codes D000 (toxic), D001 (ignitable), and D008 (EP Toxic).

18. On or about February 24, 1983, Respondent and EPA entered into a Consent Agreement/Consent Order ("CA/CO") which found that Respondent treated and/or stored the hazardous waste pentachlorophenol without a permit. Respondent was ordered to amend the Part A application for a permit to include all hazardous wastes treated, stored, or disposed of at Respondent's Facility.

19. On or about March 11, 1983, Respondent submitted a revised Part A application for a permit for storage in tanks and treatment in tanks of those hazardous wastes codes listed in Paragraph 17 above. In addition, in response to the above-mentioned CA/CO, pentachlorophenol, U242, was added and deleted.

20. On or about February 11, 1985, Respondent submitted an amended Part A permit application which again indicated that it processed and stored waste oil in tanks. The hazardous wastes listed as handled at the Facility were reduced to K052 and D001.

21. The following Solid Waste Management Units ("SWMUs") have been identified at the Facility:

a. A tank farm consisting of at least thirty-four (34) aboveground storage tanks which have been used primarily for the bulk storage and processing of used oil and hazardous waste solvents, and four horizontally mounted tanks equipped with steam

coils used as cookers which vent to the atmosphere. The tank farm has been located primarily north of the office building; however, as tanks have been removed from service, some have been stored along the east side of the Facility and two tanks have been stored outside the security fence southeast of the Facility. Over time, the number and location of the tanks has varied. The capacity of the tanks currently in use is in excess of 500,000 gallons. During a June 16, 1983 inspection, MDNR representatives reported that tank #16, which contained hazardous waste solvents, had a leak at the hand valve resulting in a drip occurring approximately every second resulting in a release to the gravel below the valve. In March and April of 1987, contaminated soils and gravel from the southern third of the tank farm were removed, generally to a depth of approximately three (3) feet, and disposed of at the Johnson County Landfill.

b. Underground pipes which connect various tanks throughout the Facility. During the April 1987 soil excavation, a leaking underground pipe was found near the north wall of the office building.

c. A waste oil loading and unloading area located on the west side of the Facility near the tank farm area. A 1984 EPA workplan for a field investigation at the Facility noted that spillage at the outside loading area had soaked into the ground, as evidenced by the stained ground.

d. An underground septic tank which was discovered at the Facility in 1987. The septic tank contained 1300 gallons of

an oil and water mixture. When the septic tank was full, its contents could have flowed out the lateral line to the north, contributing to the spread of contamination underground. A four inch lateral line emanated from the septic tank underground at about four feet from present grade and was believed to have led to another old septic tank which used to be located where tanks 25, 26, and 27, are now situated. Both septic tanks have been removed.

e. A garage, located southwest of the tank farm and adjacent to the office building, where small tank trucks were unloaded through hose bib connections. The garage has also been used for the storage of the spent Calgon activated carbon filter units and spent clay filter units.

f. A flash heater and flash tower, located in the northeast corner of the Facility. Waste oil is heated to 265°F to evaporate the light ends and water.

g. A vapor recovery system, located east of tanks 5 and 6, which condenses and collects condensate from the flash heater and flash tower. The condensate, which is composed of light ends and water, is collected in a 13,000 gallon tank.

h. A laboratory, located in the building south of the tank farm. Various hazardous wastes are generated in the laboratory, depending on lab activities.

i. A concrete containment basin located in the northwest corner of the Facility, with a capacity of 25,000 gallons, has been used to collect storm run-off which mixes with

on-site waste oil, water drained from the incoming waste oil, and also the water portion of the condensate from the vapor recovery system. In 1984, a cement floor was poured in the containment basin.

j. A clay absorber unit, used in conjunction with an activated carbon filter unit in the treatment of wastewaters from the containment pit and water condensate from the heat exchanger. The clay absorber removes free and emulsified oil and grease from the wastewater prior to the wastewater being treated in the activated carbon filter unit.

k. Two (2) Calgon activated carbon filter units used in the treatment of wastewater from the containment pit and water condensate from the heat exchanger. The non-pressure granular activated carbon absorption units are designed to remove the dissolved organic contaminants present in the wastewater before being pumped into an aboveground storage tank.

22. Respondent has submitted a plan for closure of the Facility which is currently under review by MDNR.

23. On August 17, 1986, as part of a RCRA Facility Assessment ("RFA"), representatives of the EPA installed monitoring well R-1 which was located on property adjacent to the Facility and apparently down-gradient in a hydrogeologic sense. Monitoring well R-1 was sampled on September 10, 1986. Water was not encountered but a 6.2 foot oil column was measured. Analytical results from this sampling include the following:

<u>Contaminant</u>	<u>Concentration</u> <u>(ug/L)</u>
Arsenic	2,560
Benzene	19,200
Cadmium	320
Chloroethane	7,600
Chloromethane	11,900
Chromium	12,700
Lead	110,000
1,1-Dichloroethane	16,400
1,2-Dichloroethane	750
1,1-Dichloroethylene	545
Trans-1,2-Dichloroethylene	1,800
Ethylbenzene	1,225,000
1,1,2,2-Tetrachloroethane	36,000
Tetrachloroethylene	195,000
Toluene	667,000
1,1,1-Trichloroethane	251,000
Trichloroethylene	8,600
Vinyl Chloride	4,800

24. On October 3, 1986, Respondent informed EPA that an old abandoned septic tank was buried under the tank farm area at the Facility. The tank was found to contain 300 gallons of oil and 1000 gallons of water. Respondent had Quality Analytical Services perform a GC/MS scan on the oil and found the chemical composition to be almost identical to that of the oil sample taken from monitoring well R-1.

25. On December 3, 1987, soil samples were taken on the Livers Bronze property located adjacent to and west of the Facility. The analytical data from this sampling event indicates that the following contaminants were found in the soil:

<u>Location</u>	<u>Contaminant</u>	<u>Concentration</u> <u>(ug/Kg)</u>
TH-2-Upper Soil	Methylene Chloride	654
TH-2-Upper Soil	Toluene	297
TH-2-Upper Soil	Xylenes	232
TH-2-Lower Soil	Toluene	861
TH-2-Lower Soil	Xylenes	278
TH-3-Upper Soil	1,1-Dichloroethane	147
TH-3-Upper Soil	Chloroform	75
TH-3-Upper Soil	Tetrachloroethene	432
TH-3-Upper Soil	Toluene	707
TH-3-Upper Soil	Ethylbenzene	2,670
TH-3-Upper Soil	Xylenes	17,396
TH-3-Lower Soil	Toluene	764
TH-3-Lower Soil	Ethylbenzene	208
TH-3-Lower Soil	Xylenes	1,373

26. On December 31, 1987, Respondent drilled seven (7) test holes on the Livers Bronze property. Groundwater samples taken from two of the test holes had visible oil on top of the water. The following contaminants were found in the groundwater at these test hole locations:

<u>Location</u>	<u>Contaminant</u>	<u>Concentration</u> <u>(ug/L)</u>
TH-2	Benzene	17
TH-2	1,1-Dichloroethane	137
TH-2	1,2-Dichloroethene	180
TH-2	Methylene Chloride	22
TH-2	Toluene	6
TH-2	1,1,1-Trichloroethane	18
TH-2	Xylenes	27
TH-3	Acetone	56
TH-3	Benzene	123
TH-3	Chlorobenzene	13
TH-3	Chloroethane	254
TH-3	1,1-Dichloroethane	706
TH-3	1,2-Dichloroethene	76
TH-3	1,2-Dichloroethane	31
TH-3	Ethylbenzene	48
TH-3	Methylene Chloride	27
TH-3	Tetrachloroethene	6
TH-3	Toluene	19
TH-3	1,1,1-Trichloroethane	91
TH-3	Xylenes	345
TH-2	Arsenic	5.3
TH-2	Chromium	21
TH-2	Lead	110
TH-3	Arsenic	15.7

TH-3	Chromium	24
TH-3	Lead	230

27. On April 5-6, 1988, Respondent undertook an investigatory drilling program at the Facility to determine the type and extent of petroleum contamination in soils beneath the tank farm. Three borings were drilled, cored and sampled inside the tank farm in the area where storage tanks had been removed. Analytical results of this sampling effort include the following:

<u>Location and Depth</u>	<u>Contaminant</u>	<u>Concentration</u> <u>(ug/kg)</u>
SBH-1, 3-14"	Ethylbenzene	977
SBH-1, 3-14"	Tetrachloroethene	905
SBH-1, 3-14"	Toluene	808
SBH-1, 3-14"	Xylenes	16,400
SBH-2, 8-38"	Xylenes	10,400
SBH-2, 38-68"	Ethylbenzene	250
SBH-3, 0-15"	Benzene	1,620
SBH-3, 0-15"	1,1-Dichloroethene	2,100
SBH-3, 0-15"	Ethylbenzene	16,300
SBH-3, 0-15"	Tetrachloroethene	116,000
SBH-3, 0-15"	Toluene	48,000
SBH-3, 0-15"	Trichloroethene	37,600
SBH-3, 0-15"	Xylenes	574,000
SBH-1, 3-14"	Gamma-BHC	130
SBH-1, 3-14"	Heptachlor	310
SBH-3, 0-15"	Heptachlor Epoxide	1,605

SBH-2, 8-38"	2,4,5-TP (Silvex)	33
SBH-3, 0-15"	2,4-D	31
SBH-3, 15-72"	PCB Aroclor-1260	670
SBH-3, 72-132"	PCB Aroclor-1260	570
SBH-3, 192-204"	PCB Aroclor-1260	250

28. On October 17, 1990, representatives of EPA took five (5) surface soil samples off-site in the drainage ditch east of Marsh Street, down-gradient from the Facility in an area where the soil was observed to be stained black. Analytical results of this sampling include the following:

<u>Location</u>	<u>Contaminant</u>	<u>Concentration</u> <u>(ug/kg)</u>
003	Toluene	1,200
005	Toluene	3,700
003	Ethylbenzene	1,300
005	Ethylbenzene	3,100
003	Xylenes	14,000
005	Xylenes	32,000

29. During the months of July and August, 1991, Respondent installed an on-site wastewater treatment system to collect and treat stormwater that falls upon and washes across the Facility and the water portion of the condensate from the vapor recovery system. The wastewater treatment system removes dissolved organic contaminants present in the wastewater prior to being pumped into an aboveground storage tank.

30. On May 15, 1992, Respondent submitted a plan for interim status closure of the Facility. On pages 5-9 of the closure plan, Respondent concluded, "The data is sufficient to indicate that contaminants, particularly some volatile organic compounds, have moved off-site."

31. On September 8 and 9, 1993, Respondent conducted further groundwater sampling of the wells GW-1, GW-2, GW-3, and GW-4, all located on-site at the Facility, and EPA R-1, an off-site well located west of the Facility. Results of this sampling effort include the following:

<u>Location</u>	<u>Contaminant</u>	<u>Concentration</u> <u>(ug/L)</u>
GW-1 Dupl.	Acetone	16,700
GW-3	Benzene	388
EPA R-1	Benzene	165
GW-4	2-Butanone	1,220
GW-1 Dupl.	2-Butanone	2,610
GW-4	Chloroethane	57.2
GW-3	1,1-Dichloroethane	271
GW-4	Cis-1,2-Dichloroethene	1,370
GW-4	Ethylbenzene	307
EPA R-1	Ethylbenzene	86.8
GW-4	Methylene Chloride	51.9
GW-1 Dupl.	Methylene Chloride	96.4
GW-4	4-Methyl-2-Pentanone	1,050
GW-4	Toluene	2,040
EPA R-1	Toluene	149

GW-4	1,1,1-Trichloroethane	61.7
EPA R-1	1,1,1-Trichloroethane	29.0
GW-4	Vinyl Chloride	122
EPA R-1	Xylenes	530
GW-3	1,2-Dichloroethane	32.6
GW-3	1,2,4-Trichlorobenzene	529
GW-4	Acenaphthene	73.4
EPA R-1	Acenaphthene	105
GW-4	Anthracene	30.3
GW-4	Dibenzofuran	53.8
GW-4	Flouranthene	44.1
GW-3	Flourene	529
EPA R-1	Flourene	157
EPA R-1	2-Methylnaphthalene	1,480
GW-3	2-Methylnaphthalene	4,510
GW-3	Naphthalene	1,960
GW-4	Naphthalene	1,090
EPA R-1	Naphthalene	870
GW-2	Phenanthrene	89.4
GW-3	Phenanthrene	1,410
GW-4	Phenanthrene	135
EPA R-1	Phenanthrene	465
GW-3	2,4-Dimethylphenol	385
GW-1 Dupl.	Phenol	1,030
GW-4	Pyrene	36
EPA R-1	Pyrene	87.8

EPA R-1	PCB-1260	28.2
GW-3	PCB-1260	142
GW-3	Arsenic	345
GW-3	Lead	742
GW-4	Lead	60

32. Hazardous wastes or hazardous constituents at the Facility may pose a threat to human health or the environment. Some of the hazardous wastes or hazardous constituents that have been released to the environment may cause harmful health effects and are suspected, potential, or proven carcinogens.

33. Hazardous wastes or hazardous constituents may further migrate from the Facility into the environment by the following migration pathways:

a. Groundwater: Groundwater analytical data, as described herein, documents that hazardous wastes and/or hazardous constituents have migrated to groundwater at the Facility and off-site.

b. Soil: Soil analytical data, as described herein, documents that hazardous wastes and/or hazardous constituents have been released and are present in the soil at the Facility and off-site. Releases to soil may contribute to existing groundwater contamination through infiltration and be transported off-site by surface runoff. Cores from soil borings taken inside the tank farm showed evidence of numerous root cavities running vertically from the surface to depths in excess of 20 feet. The cavities were often covered with oil and provide a ready path of

migration from the ground surface to the water table. In addition, underground piping present at the Facility may act as a preferential pathway for the migration of contaminants in the subsurface.

c. Surface Water: Transportation of contaminants by surface water, either in mixture or adsorbed upon sediment in transport, is also a potential mechanism of transport or release. Three surface water drainage routes which channel runoff from the Site have been identified. Pathway 1 flows north along the east side of Marsh Road to a point about 300 feet north of the Facility then flows under Marsh Road through a culvert and into Livers Bronze Company's storm drain system. Pathway 2 extends west from the Facility's shop-unloading area to Liver's parking lot. Pathway 3 flows west along the south border of Liver's parking lot. All three routes drain into the east drainage ditch of I-435. Water reaching the ditch flows north into a concrete culvert. The culvert then drains the water under I-435 where it then flows south into the Blue River.

34. The Facility is located within the Central Lowlands Physiographic Province. Structurally, the Site is located on the southeastern flank of the Forest City Basin. The surficial stratigraphy includes limestone cliffs on the east side of the Facility which are believed to be of the Kansas City Group. Approximately eight to fifty feet of unconsolidated materials underlie the Facility, thickening to the west. This material is likely predominantly colluvium and residuum. At the west margin

of the Facility alluvium is also present in the unconsolidated materials and is expected to become dominant towards the Blue River. In borings on the Livers Bronze property which immediately adjoins the Facility on the west, alluvium was encountered immediately above the bedrock. The sequence appears to coarsen with depth, with sand and gravel being encountered just above auger refusal. Bedrock was reportedly shale, possibly part of the Pleasanton formation. Water was plentiful, according to the boring log.

35. A conceptual model for groundwater flow can be generated by knowledge of the Site stratigraphy, topography, and information gathered from the installation of borings and monitoring wells. Groundwater was encountered in the alluvial materials at depths of five to twenty feet on Site. The shallower water was encountered in the upgradient well, GW-1 just above bedrock. The deeper water was encountered in the downgradient wells (GW-3 and GW-4) approximately midway between the ground surface and bedrock. The piezometric surface is expected to mimic the top of bedrock and topography, both of which dip to the west. Groundwater flow should generally be to the west and towards the Blue River which is located approximately 600 feet west of the Facility. The Blue River is expected to serve as a groundwater discharge point for the uppermost unconsolidated aquifer.

36. The highest hydraulic conductivity of the uppermost aquifer can be expected just above bedrock. In the upgradient

areas the weathered top of bedrock and residual cherts will provide the highest hydraulic conductivity. At the downgradient margin of the Facility and off-site to the west the coarsening downward alluvium offers the highest hydraulic conductivity in the coarsest materials adjacent to the bedrock. Non-aqueous phase liquid ("NAPL"), has been detected at the groundwater table in monitoring wells at the Facility. It is possible that residual NAPL contaminant saturations at the water table or the bedrock surface could provide dissolution of contaminants to groundwater into the future. Both groundwater and surface water may serve as a conduit for contaminants from the Facility to the Blue River.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

37. Based on the foregoing findings of fact and after consideration of the administrative record, the Waste Management Division Director of EPA Region VII makes the following conclusions of law and determinations:

a. Respondent is a "person" within the meaning of Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).

b. Respondent is the owner or operator of a facility that has operated or is operating subject to the interim status requirements of RCRA, within the meaning of Section 3005(e) of RCRA, 42 U.S.C. § 6925(e).

c. Certain wastes and constituents found at the Facility are hazardous wastes or hazardous constituents as defined by Sections 1004(5) and 3001 of RCRA, 42 U.S.C.

§§ 6903(5) and 6921, and the regulations promulgated thereunder at 40 C.F.R. Part 260 & 261.

d. There is or has been a release of hazardous wastes or hazardous constituents into the environment from the Facility.

e. The actions required by this Order are necessary to protect human health and the environment.

VII. WORK TO BE PERFORMED

38. Pursuant to Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), Respondent is ordered to perform those acts set forth below in the manner and by the dates specified by this Order and the SOWs attached. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum: the SOWs as set forth in Attachments II & III and incorporated herein by reference, any EPA-approved Interim Measures Workplan, RCRA Facility Investigation Workplan, and all other Workplans required pursuant to this Order, RCRA and its implementing regulations, and relevant provisions of EPA guidance documents applicable to the work to be performed hereunder.

~~A.~~ INTERIM MEASURES ("IM")

39. Respondent shall implement closure and post-closure activities as approved by MDNR for IM, the goal of which is to prevent or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

40. In the event Respondent obtains information which identifies an immediate or potential threat to human health

and/or the environment, discovers new releases of hazardous waste and/or hazardous constituents, or discovers new solid waste management units not previously identified, Respondent shall notify the EPA Project Coordinator orally within 48 hours of discovery and notify EPA in writing within seven (7) days of such discovery, summarizing the immediacy and magnitude of the potential threat(s) to human health and/or the environment. Upon written request of EPA, Respondent shall submit to EPA an IM Workplan for approval that identifies interim measures which mitigate this threat. Following EPA approval of any IM Workplan, Respondent shall implement the workplan, as approved by EPA. If EPA determines that immediate action is required, then the EPA Project Coordinator may orally authorize Respondent to act prior to making the required written submission.

41. If EPA identifies an immediate or potential threat to human health and/or the environment, discovers new releases of hazardous waste and/or hazardous constituents, or discovers new solid waste management units not previously identified, EPA will notify Respondent in writing. Upon written request of EPA, Respondent shall submit to EPA an IM Workplan for approval that identifies interim measures which will mitigate the threat. Following EPA approval of any IM Workplan, Respondents shall implement the workplan, as approved by EPA. If EPA determines that immediate action is required, the EPA Project Coordinator may orally require Respondent to act prior to Respondent's receipt of EPA's written notification.

42. All IM Workplans shall ensure that the IM are designed to mitigate current or immediate threat(s) to human health and/or the environment, and should, to the extent practicable, be consistent with the objectives of, and contribute to the performance of any remedy which may be required at the Facility.

43. IM Workplans shall include:

- ▶ Interim Measures Objectives;
- ▶ Public Involvement Plan;
- ▶ Data Collection Quality Assurance Plan;
- ▶ Data Management Plan;
- ▶ Design Plans and Specifications;
- ▶ Operation and Maintenance Plan;
- ▶ Project Schedule;
- ▶ Interim Measure Construction Quality Assurance Plan; and
- ▶ Reporting Requirements.

B. EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

44. Within ninety (90) days of the effective date of this Consent Order, Respondent shall submit to EPA a report which identifies potential corrective measures technologies that may be used on-site or off-site for the containment, treatment, remediation and/or disposal of contamination and which also identifies any field data that needs to be collected in the Facility Investigation to facilitate the evaluation and selection of the final corrective measure or measures to be implemented.

C. RCRA FACILITY INVESTIGATION ("RFI")

45. Within ninety (90) days of the effective date of this Consent Order, Respondent shall submit to EPA a Workplan for a RCRA Facility Investigation ("RFI Workplan"). The RFI Workplan

is subject to approval by EPA and shall be developed in a manner consistent with the RFI Scope of Work contained in Attachment II.

46. The RFI Workplan shall be designed to define the presence, magnitude, extent, direction, and rate of movement of any release of hazardous wastes or hazardous constituents from or to all affected media (groundwater, soil, surface water, sediments) within and beyond the Facility. The RFI Workplan shall document in detail the methodology Respondent shall use to

a. gather data needed to make decisions on stabilization during the early phase of the RFI;

b. identify and characterize all sources of contamination;

c. define the degree and extent of contamination;

d. characterize the potential pathways of contamination migration;

e. identify actual or potential human and ecological receptors; and,

f. support the development of alternatives from which a corrective measure(s) will be selected by EPA. A specific schedule for implementation of all activities shall be included in the RFI Workplan.

47. In accordance with the provisions of Attachment II herein, The RFI Workplan shall include the following:

- ▶ Project Management Plan;
- ▶ Data Collection Quality Assurance Plan;
- ▶ Data Management Plan;
- ▶ Health and Safety Plan; and
- ▶ Public Involvement Plan (referenced as the "Community Relations Plan" in Attachment II).

48. Consistent with the schedule contained in the RFI Workplan, Respondent shall submit to EPA a Draft RFI Report completed in a manner consistent with the RFI Scope of Work contained in Attachment II of this Order.

49. Within thirty (30) days of receipt of EPA comments on the Draft RFI Report, Respondent shall submit to EPA the Final RFI Report completed in a manner consistent with the RFI Scope of Work contained in Attachment II of this Order.

50. Within seventy-five (75) days of the effective date of this Order, Respondent shall submit to EPA a Description of Current Conditions Report. The Description of Current Conditions Report will be completed in a manner consistent with Task I of the RFI Scope of Work contained in Attachment II of this Order.

D. CORRECTIVE MEASURES STUDY ("CMS")

51. Upon receipt of EPA approval of the RFI Report, Respondent shall conduct a Corrective Measures Study in accordance with the CMS Scope of Work in Attachment III.

52. The CMS shall detail the methodology for developing and evaluating the potential corrective action alternatives to remedy any contamination at the Facility. The CMS shall identify the potential corrective action measure technologies, including any innovative technologies, that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination.

53. Respondent shall prepare treatability studies for all potential corrective measures that involve treatment except where

Respondent can demonstrate to EPA's satisfaction that they are not needed. Within thirty (30) days of receiving a written request from EPA, Respondent shall submit to EPA for approval a Workplan describing the type (e.g., bench versus pilot) and design of the study or studies.

54. Within forty-five (45) days after receipt of EPA approval of the Final RFI Report, Respondent shall submit to EPA the Draft Corrective Measures Study Report. The Draft Corrective Measures Study Report will be completed in a manner consistent with Tasks VIII, IX, and X of the CMS Scope of Work in Attachment III of this Order.

55. Within thirty (30) days after receipt of EPA comments on the Draft Corrective Measures Study Report, Respondent shall submit to EPA the Final Corrective Measures Study Report. The Final Corrective Measures Study Report shall be completed in a manner consistent with Tasks VIII, IX, and X of the CMS Scope of Work in Attachment III of this Order.

E. CORRECTIVE MEASURES IMPLEMENTATION ("CMI")

56. Upon EPA's selection of the corrective measure, if Respondent has complied with the terms of this Order, EPA shall provide a sixty (60) day period for negotiation of an administrative order on consent (or a judicial consent decree) for implementation of the selected corrective measure. If agreement is not reached during this period, EPA reserves all rights it has to implement the corrective measure or other remedial response and to take any other appropriate actions under

RCRA, Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9607(a), as amended ("CERCLA"), or any other available legal authority, including the issuance of a Unilateral Administrative Order directing Respondent to implement the corrective measures.

VIII. PUBLIC PARTICIPATION IN CMS

57. EPA will provide the public with an opportunity to review and comment on the final draft of the Corrective Measures Study Report and a description of EPA's proposed corrective measure(s), including EPA's justification for proposing such corrective measure(s) (the "Statement of Basis").

58. Following the public comment period, EPA may approve the Corrective Measures Study Report and select a final corrective measure(s) or require Respondent to revise the Report and/or perform additional corrective measures studies.

59. EPA will notify Respondent of the final corrective measure selected by EPA in the Final Decision and Response to Comments ("RTC"). The notification will include EPA's reasons for selecting the corrective measure.

IX. PROJECT COORDINATOR

60. EPA's Primary Project Coordinator is:

Mr. Tom Judge
Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102

314-751-3176

578-

EPA's Secondary Project Coordinator is:

551-7821 John Delashmit

Diane Huffman
Compliance Section/RCRA Branch
U.S. Environmental Protection Agency, Region VII
726 Minnesota Avenue
Kansas City, KS 66101
(913) 551-7544

Jennifer McDonald
551-7843

551-7696 Mary Bitney

61. Within ten (10) days of the effective date of this Order Respondent shall designate a Project Coordinator and shall notify EPA in writing of the name and address of the Project Coordinator it has selected. Both EPA's and Respondent's Project Coordinators shall be responsible for overseeing the implementation of this Order. EPA's Project Coordinators will be EPA's designated representatives. Respondent's Project Coordinator will be Respondents designated representative for purposes of this Order and any certification made in compliance with Section XVII (Document Certification). All communications between Respondent and EPA, and all documents, reports, approvals and other correspondence concerning the activities performed pursuant to this Order shall be directed through the Project Coordinators.

62. Either party may change its project coordinator. Respondent agrees to provide at least fifteen (15) days written notice prior to changing its Project Coordinator.

63. The absence of the EPA's Project Coordinators from the Facility shall not be cause for the stoppage of work.

64. Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices, or other

submissions relating to or required under this Order shall be in writing and shall be sent to EPA's Primary and Secondary Project Coordinators.

X. SUBMISSIONS

65. Four (4) copies of all documents shall be hand delivered or sent by certified mail, return receipt requested, or by overnight express mail to EPA's Primary and Secondary Project Coordinators. All submissions required by this Order shall be printed on recycled paper unless such submissions are not conducive to placement on recycled paper or if the use of recycled paper is beyond the Respondent's control.

66. After review of any workplan, report or other item which is required to be submitted for approval pursuant to this Order, EPA shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) disapprove, in whole or in part, the submission, directing the Respondent to modify the submission; or (d) any combination of the above.

67. Within thirty (30) days of receipt of EPA's written approval or approval upon conditions, pursuant to Paragraph 66(a) or (b), Respondent shall proceed to take any action required by the plan, report, or other item, as approved by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the conditions made by EPA.

68. Within thirty (30) days of receipt of a notice of disapproval pursuant to Paragraph 66(d), Respondent shall revise and resubmit the workplan, report, or other item for approval, in accordance with EPA's written comments. Any stipulated penalties applicable to the submission, as provided in Section XVIII (Stipulated Penalties), shall accrue during the 30-day period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraph 69. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Respondent to revise the submission.

69. If upon resubmission, a plan, report, or item is disapproved by EPA due to a material defect, Respondent shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Respondent invokes the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and EPA's disapproval is overturned pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XVIII (Stipulated Penalties) shall govern the implementation of the Work, and accrual and payment of any stipulated penalties during dispute resolution. If EPA's disapproval is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVIII (Stipulated Penalties).

70. All plans, reports and other items required to be submitted to EPA under this Order shall, upon approval by EPA, be enforceable under this Order. In the event EPA approves a portion of a workplan, report or other item required to be submitted to EPA under this Order, the approved portion shall be enforceable under this Order.

71. Prior to receiving written approval, no plan, report, specification or schedule shall be construed as approved and final. Verbal advice, suggestions, or comments given by EPA representatives will not constitute an official approval, nor shall any verbal approval or verbal assurance of approval be considered binding.

72. Any deviations from the approved workplans must be approved by EPA prior to implementation; must be documented, including reasons for the deviations; and must be reported in the applicable report (e.g., RFI).

XI. PROGRESS REPORTS

73. Beginning with the first full month following the effective date of this Order, and throughout the period that this Order is effective, Respondent shall provide EPA with monthly progress reports. Progress reports are due on the tenth (10th) day of the month. The progress reports shall conform to requirements in the relevant Scopes of Work contained in Attachments II & III, and shall include the results of all sampling, test and other data generated by or on behalf of Respondent in accordance with the requirements of this Order.

XII. PROPOSED CONTRACTOR/CONSULTANT

74. All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer, hydrologist, geologist, or environmental scientist, with expertise in hazardous waste site cleanup. Respondent's contractor or consultant shall have the technical expertise sufficient to adequately perform all aspects of the work for which it is responsible. Within fourteen (14) days of the effective date of this Order, Respondent shall notify the EPA Project Coordinator in writing of the name, title, and qualifications of the engineer, hydrologist, geologist, or environmental scientist and of any contractors or consultants and their personnel to be used in carrying out the terms of this Order. In addition, the Respondent shall ensure that when a license is required, it uses licensed individuals for performing any work required by this Order.

75. Respondent further agrees that within thirty (30) days of retaining or employing any agent, consultant, or contractor for the purpose of carrying out the terms of this Order, Respondent will enter into an agreement with any such agents, consultants, or contractors requiring them to provide Respondent a copy of all documents produced pursuant to this Order.

76. EPA reserves the right to disapprove Respondent's contractor and consultant. If EPA disapproves a contractor or consultant, then Respondent must, within fourteen (14) days of receipt from EPA of written notice of disapproval, notify EPA, in

writing, of the name, title, and qualifications of any replacement. EPA's disapproval shall not be subject to review under Section XIX (Dispute Resolution).

XIII. ADDITIONAL WORK

77. EPA may determine or Respondent may propose that certain tasks, including investigatory work, engineering evaluation, or procedure/methodology modifications are necessary in addition to the tasks included in any EPA-approved workplan, when such additional work is necessary to meet the purposes set forth in Section III (Statement of Purpose). If EPA determines that such additional work is necessary, it will request that Respondent perform the additional work. Within ten (10) days of such request, Respondent may request a meeting with EPA to discuss the additional work. If required by EPA, Respondent shall submit for EPA approval of a workplan for the additional work. Such workplan shall address the affect of the additional work on each part of the approved initial workplan and shall be submitted within thirty (30) days of receipt of EPA's request that additional work is necessary. Upon approval of a workplan, Respondent shall implement it in accordance with the schedule and provisions contained therein.

XIV. QUALITY ASSURANCE AND SAMPLING

78. All sampling and analyses performed pursuant to this Order shall follow all applicable EPA guidance regarding sampling and analysis, including quality assurance/quality control

("QA/QC"), data validation, and chain of custody procedures. Workplans shall contain QA/QC and chain of custody procedures for all sampling, monitoring, and analytical activities.

79. The name(s), addresses, and telephone numbers of the analytical laboratories Respondent proposes to use must be specified in the applicable workplan(s). Respondent shall ensure that such laboratories participate in a QA/QC program equivalent to that which is followed by EPA. Respondent shall provide to EPA in the work plans the QA/QC procedures to be followed by all sampling teams and laboratories performing data collection and/or analysis.

80. EPA may conduct a performance and QA/QC audit of the laboratories chosen by Respondent before, during, or after sample analyses. Upon request by EPA, Respondent shall have the laboratory being used by Respondent analyze samples submitted by EPA for quality assurance monitoring as part of such an audit. If the audit reveals deficiencies in a laboratory's performance or QA/QC, resampling and additional analysis may be required.

81. Respondent shall monitor to ensure that high quality data is obtained by its consultant or contract laboratories. Respondent shall ensure that laboratories used by Respondent for analysis perform such analysis according to the latest approved edition of "Test Methods for Evaluating Solid Waste, (SW-846)", or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall specify all such protocols in the applicable workplan (e.g., RFI). EPA may

reject any data that does not meet the requirements of the approved workplan or EPA analytical methods and may require resampling and additional analysis.

82. Within five (5) days of receipt of a request by EPA, Respondent shall make available to EPA the results of all sampling, tests or other data generated by or on behalf of Respondent in accordance with the requirements of this Order. Otherwise such information shall be included in the monthly progress reports submitted by Respondent pursuant to Section XI (Progress Reports) of this Order.

83. Respondent shall notify EPA in writing at least thirty (30) days before engaging in any sample collection activity conducted pursuant to this Order. Respondent shall notify EPA in writing at least fourteen (14) days before engaging in any well installation, equipment installation, construction, excavation or any other field activities, except sampling, conducted pursuant to this Order. If Respondent believes it must commence emergency field activities including sampling without delay, Respondent may seek emergency telephone authorization from the EPA Project Coordinator to commence such activities immediately. Upon request of EPA, Respondent shall allow EPA or its authorized representatives to take split or duplicate samples of any samples collected by Respondent pursuant to this Order. EPA shall have the right to take any additional samples that it deems necessary.

84. All sampling and analyses shall be done pursuant to protocols or procedures approved by EPA. Samples taken by

Respondent shall be handled according to appropriate chain-of-custody procedures that shall be described or incorporated by reference in the submitted workplans and reports.

XV. ACCESS TO PROPERTY AND INFORMATION

85. Respondent shall provide or obtain access to the Facility property and appropriate off-site property, as determined by EPA. Respondent shall also provide access to all records and documentation related to the conditions at the Facility and the activities conducted pursuant to this Order. Such access to property and information shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State of Missouri representatives. These individuals shall be permitted to move freely at the Facility and appropriate off-site property in order to conduct activities which EPA determines to be necessary. Such unrestricted access shall continue until such time as the Acknowledgment of Termination has been executed as set forth in Section XXIX (Termination and Satisfaction).

86. Where work under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall obtain all necessary access agreements within fifteen (15) days of approval of any workplan for which access is required, or as otherwise specified in writing by EPA's Project Coordinator. Respondent shall submit a copy of each access agreement Respondent obtains to EPA's Project Coordinator.

87. Respondent shall immediately notify EPA if, after using its best efforts, it is unable to obtain such agreements. As used in this Section, "best efforts" shall include a certified letter from Respondent to the owner of the property requesting an access agreement to permit Respondent and EPA, including its authorized representatives, access to the property to conduct the activities required under this Order. "Best efforts" also includes payment by Respondent of reasonable compensation in consideration for receipt of an access agreement. In Respondent's notification to EPA of failure to obtain access, Respondent shall describe and document in writing their efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate work required by this Order, using such means as EPA deems appropriate. In the event EPA obtains access, Respondent shall undertake EPA-approved work on such property.

88. Nothing in this Section limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.

89. Respondent may assert a business confidentiality claim pursuant to 40 C.F.R. § 2.203(b) with respect to part or all of any information it submits to EPA pursuant to this Order, provided such claim is allowed by Section 3007(b) of RCRA, 42 U.S.C. § 6927(b). Any assertion of confidentiality must be accompanied by information that satisfies the items listed in 40 C.F.R. § 2.204(e)(4). Analytical and other data shall not be

claimed as confidential by Respondent. EPA shall disclose information covered by a business confidentiality claim only to the extent permitted by, and by means of the procedures set forth in, 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, EPA may make it available to the public without further notice to Respondent. EPA may, at any time, challenge claims of privilege through negotiations or otherwise as provided by law or the Federal Rules of Civil Procedure.

XVI. RECORD PRESERVATION

90. Respondent shall preserve all documents and information relating in any way to this Order, including those relating to the hazardous waste or hazardous constituents found on or released from the Facility, and to hazardous waste management at the Facility, for six years after the execution of the Acknowledgment of Termination as set forth in Section XXVIII (Termination and Satisfaction). If, during such six year period, EPA shall request, in writing, a review of, or copies of, any such documentation or information, Respondent shall provide the original or copies of such documents or information to EPA within fifteen (15) business days. At the end of this six year period and before any document or information is destroyed, Respondent shall notify EPA in writing that such documents and information are available to EPA for inspection, and upon request, shall provide the original or copies of such documents and information to EPA. Such written notification shall reference the effective

date, caption, and docket number of this Order and shall be addressed to:

Director, Waste Management Division
U.S. Environmental Protection Agency, Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

91. All documents submitted pursuant to this Order shall be stored by Respondent in a centralized location at the Facility to afford ease of access by EPA or its representatives.

XVII. DOCUMENT CERTIFICATION

92. Any report or other document submitted by Respondent pursuant to this Order which makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Order shall be certified by a responsible corporate officer of Respondent or a duly authorized representative. A responsible corporate officer means: a president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation. A person is a duly authorized representative only if: (a) the authorization is made in writing by a responsible officer; (b) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator, superintendent, or position of equivalent responsibility for the company's environmental matters at the

regulated facility or activity; and (c) the written authorization is submitted to the EPA.

93. The certification required by Paragraph 92. above, shall be in the following form:

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. I certify that the information contained in or accompanying this submission is true, accurate, and complete. As to those identified portion(s) of this submission for which I cannot personally verify the accuracy, I certify that this submission and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____

Name: _____

Title: _____

Date: _____

XVIII. STIPULATED PENALTIES

94. The stipulated penalties set forth below shall be assessed against Respondent at any time Respondent fails to comply with any requirement of this Order, unless a force majeure has occurred, as defined in Section XX (Force Majeure) and, EPA has approved the extension of a deadline as required by Section XX (Force Majeure). Compliance by Respondent shall include completion of an activity or any matter under this Order in accordance with the provisions of this Order, and within the specified time schedules in and approved under this Order.

a. For failure to commence, perform, or complete Field Work or Interim Measures in accordance with the provisions of this Order or at the time required pursuant to this Order:

- i. \$2,000 per day for the first one to seven days of such violation;
- ii. \$3,500 per day for the eighth through fifteenth day of such violation; and,
- iii. \$5,000 per day for each day of such violation thereafter.

b. For failure to complete and submit any workplans or reports (other than progress reports) in accordance with the provisions of this Order or at the time required pursuant to this Order:

- i. \$1,000 per day for the first seven days of such violation;
- ii. \$2,500 per day for the eighth through fifteenth day of such violation; and,
- iii. \$5,000 per day for each day of such violation thereafter.

c. For failure to complete and submit, other written submission not included in Paragraph 94.b. of this Section in accordance with the provisions of this Order or at the time required pursuant to this Order:

- i. \$500 per day for the first seven days of such violation;
- ii. \$1,000 per day for the eighth through fifteenth day of such violation; and,
- iii. \$2,000 per day for each day of such violation thereafter.

d. For failure to comply with any other provisions of this Order in accordance with the provisions of this Order:

- i. \$1,000 per day for the first seven days of such violation;
- ii. \$2,500 per day for the eighth through fifteenth day of such violation; and,
- iii. \$3,000 per day for each day of such violation thereafter.

95. Penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Order. Penalties shall continue to accrue regardless of whether EPA has notified the Respondent of a violation.

96. All penalties owed to the United States under this Section shall be due and payable within thirty (30) days of the Respondent's receipt from EPA of a written demand for payment of the penalties. Such a written demand will describe the violation and will indicate the amount of penalties due.

97. Interest shall begin to accrue on any unpaid balance beginning on the thirty-first day after Respondent's receipt of EPA's demand letter, and will accrue until such penalties and interest have been paid in full. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. Pursuant to 31 U.S.C. § 3717, an additional penalty of six per cent (6%) per annum on any unpaid principal shall be

assessed for any stipulated penalty payment which is overdue for ninety (90) or more days.

98. All penalties shall be made payable by certified or cashier's check to the "Treasurer of the United States" and shall be remitted to:

Regional Hearing Clerk
U.S. Environmental Protection Agency, Region VII
Mellon Bank
P.O. Box 360748M
Pittsburgh, Pennsylvania 15251

All payments shall reference the name of the Facility, the Respondent's name and address, the EPA docket number of this Order, and shall indicate that they are in payment of stipulated penalties. A copy of each transmittal of payment shall be sent simultaneously to EPA's Project Coordinator.

99. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the terms and conditions of this Order, nor shall the payment of penalties alter or relieve Respondent of the responsibility to comply with this Order.

XIX. DISPUTE RESOLUTION

100. If Respondent disagrees, in whole or in part, with any EPA disapproval or other decision or directive made by EPA pursuant to this Order, it shall notify EPA in writing of its objections and the bases therefor within ten (10) days of receipt of EPA's disapproval, decision, or directive. Such notice shall set forth the specific points of the dispute, the position

Respondent maintains should be adopted as consistent with the requirements of this Order, the factual and legal bases for Respondent's position, and all matters Respondent considers necessary for EPA's determination. EPA and Respondent shall then have fourteen (14) days from EPA's receipt of Respondent's objections to attempt to resolve the dispute. If agreement is reached, the resolution shall be reduced to writing, signed by each party and incorporated into this Order. If the parties are unable to reach agreement within this 14-day period, the matter shall be referred to the EPA Regional Judicial Officer. The EPA Regional Judicial Officer shall then decide the matter and provide a written statement of his decision to both parties, which shall be incorporated into this Order.

101. The invocation of the dispute resolution process under this Section shall not extend, postpone or affect in any way any obligation of the Respondent under this Order not directly in dispute, unless EPA agrees otherwise. Stipulated penalties shall continue to accrue during the dispute resolution process for any matter. The questions of whether and in what amounts Respondent shall be liable for stipulated penalties which accrued during or on account of the dispute resolution process will be resolved by the EPA Regional Judicial Officer in his decision of the dispute.

102. Notwithstanding any other provision of this Order, no action or decision by EPA, including without limitation, decisions of the EPA Regional Judicial Officer pursuant to this Order, shall constitute final agency action giving rise to any

rights to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with the requirements of this Order.

XX. FORCE MAJEURE

103. Respondent agrees to perform all requirements of this Order within the time limits established by this Order, unless the performance is prevented or delayed by events which constitute a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes not foreseeable and beyond control of Respondent or its consultants, contractors, subcontractors or agents, that delays or prevents performance by the schedule required by this Order despite Respondent's best efforts to meet the schedule. Force majeure does not include financial inability to complete the work, unanticipated or increased costs of performance, normal precipitation events, changed economic circumstances or failure to obtain federal, state or local permits.

104. Respondent shall immediately notify EPA orally, and shall also notify EPA in writing within five (5) days after it becomes aware of events that constitute a force majeure. Such notice shall include an estimate of the anticipated length of delay, including necessary demobilization and remobilization; a description of the cause of the delay; the measures taken or to be taken to minimize delay; and an estimated timetable for implementation of these measures. Such notice shall be reviewed

by EPA and EPA will determine whether delay has been or will be caused by a force majeure.

105. Respondent shall exercise best efforts to avoid and minimize the delay. Failure to comply with the notice provision of this Section shall constitute a waiver of Respondent's right to assert force majeure.

106. If EPA determines delay has been or will be caused by a force majeure, the time period for performance for that element of work affected may be extended for a period of time equal to the delay resulting from such circumstances. This schedule extension shall be accomplished through written modification of the Work Plan pursuant to Section XXVI (Modifications). Such an extension does not alter the schedule for performance or completion of other tasks required by the Statement of Work or Work Plan unless these are also specifically altered by approval of EPA. In the event EPA and Respondent cannot agree that any delay or failure has been or will be caused by a force majeure, or if there is no agreement on the length of the extension, such dispute shall be resolved in accordance with the provisions of Section XIX (Dispute Resolution).

XXI. RESERVATION OF RIGHTS

107. EPA hereby expressly reserves all rights and defenses that it may have, including, but not limited to, its rights to disapprove of work performed by Respondent and to require that Respondent perform tasks in addition to those stated in this Order, the Scopes of Work or the Work Plans.

108. EPA hereby expressly reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including without limitation, the assessment of penalties under Section 3008(h) of RCRA, 42 U.S.C. § 6928(h). This Order shall not be construed as a covenant not to sue or as a release, waiver or limitation of any rights, remedies, powers and/or authorities, civil or criminal, that EPA has under RCRA, CERCLA, or any other statutory, regulatory or common law authority of the United States.

109. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with the RCRA or any other applicable local, state or federal laws and regulations. This Order is not intended to be nor shall it be construed to be a permit. This Order does not relieve Respondent of any obligation to obtain and comply with any local, state or federal permits.

110. EPA hereby expressly reserves any right it may have to perform any work required to be performed hereunder by Respondent, including, but not limited to, response actions as it deems necessary to protect public health or the environment. EPA may exercise any authority it may have under CERCLA to undertake removal actions or remedial actions at any time. Notwithstanding Respondent's compliance with the terms of this Order, EPA reserves any right it may have to seek reimbursement from Respondent for all costs incurred by the United States, and

Respondent is not released from liability, if any, for such costs.

111. If EPA determines that Work in compliance or noncompliance with this Order has caused or may cause a release of hazardous substances or hazardous constituents or a threat to human health or the environment or that Respondent is not capable of undertaking any of the Work required hereunder, EPA reserves the right to order Respondent to stop further implementation of this Order for such period of time as EPA determines may be needed to abate any such release or threat or to undertake any action that EPA determines is necessary to abate such release or threat.

XXII. OTHER CLAIMS

112. By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. Neither the United States nor EPA shall be a party or be held out as party to any contract entered into by the Respondent or its agents, successors, or assigns in carrying out activities pursuant to this Order.

113. Nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondent or any person not a party to this Order, for any liability such person may have under RCRA, CERCLA or other statutes, or the common law.

114. This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2). The Respondent agrees not to sue the United States for, and waives any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§ 9606(b), 9611, and 9612, against the United States or the Hazardous Substances Superfund arising out of any activity performed under this Order.

XXIII. OTHER APPLICABLE LAWS

115. All actions required pursuant to this Order shall be performed in accordance with all applicable local, state, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals required by such laws and regulations.

XXIV. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

116. Respondent agrees to indemnify, save and hold harmless the United States, its officials, agents, contractors, and employees from any and all claims or causes of action arising from, or on account of, acts or omissions of Respondent, its officers, employees, agents, independent contractors, successors or assigns, in carrying out activities required by this Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts.

117. Respondent agrees to pay the United States all costs the United States incurs, including, but not limited to,

attorney's fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Order. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent, in carrying out activities pursuant to this Order. Neither the Respondent nor any such contractor shall be considered an agent of the United States.

XXV. FINANCIAL RESPONSIBILITY

118. Within fifteen (15) days of the effective date of this Order, Respondent shall establish and maintain a performance bond acceptable to EPA, which shall have a penal sum in the amount of at least \$150,000. The performance bond shall be similar to the surety bond guaranteeing performance specified in 40 C.F.R. §§ 264.143(c) and 264.151(c).

119. If at any time EPA determines that Respondent has defaulted in its responsibilities with regard to this Order, EPA may undertake to complete the tasks set forth by this Order, utilizing the proceeds of the foregoing financial assurance.

XXVI. MODIFICATIONS

120. This Order may be modified by mutual agreement of Respondent and EPA. Any request for a modification by Respondent must be in writing. Such requests must be timely and provide

justification for any proposed modification. EPA has no obligation to approve such requests. Any modification shall be in writing and shall be signed by an authorized representative of the Respondent and EPA. EPA's authorized representative is the Director of Region VII's Waste Management Program. Unless otherwise provided for in the modification, the effective date of any modification shall be the date on which the written modification is signed by EPA after signature by the Respondent. Respondent's Project Coordinator and EPA's Project Coordinator shall be authorized to extend by mutual written agreement any date, deadline, or schedule contained in the attached Scopes of Work or in any EPA approved Workplans. All modifications shall be incorporated into and become a part of this Order.

121. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall be construed as relieving Respondent of its obligation to obtain such formal approval as may be required by this Order, and to comply with the requirements of this Order unless or until this Order may be formally modified.

XXVII. SEVERABILITY

122. If any judicial or administrative authority issues an order that invalidates any provision of this Order, or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, then the application of any such provision(s) to other parties or circumstances not subject to the

finding or order shall remain unaffected, and all other provisions of this Order shall remain in full force and effect.

XXVIII. TERMINATION AND SATISFACTION

123. The provisions of this Order shall be deemed satisfied upon Respondent's execution of an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" ("Acknowledgment"). EPA will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to the satisfaction of EPA that the terms of this Order, including any additional tasks determined by EPA to be required pursuant to this Order, have been satisfactorily completed. Respondent's execution of the Acknowledgment will affirm Respondent's continuing obligation (1) to preserve all records and (2) to recognize EPA's reservation of rights, in accordance with these respective Sections of the Order after the rest of the Order is satisfactorily completed.

ACKNOWLEDGMENT OF TERMINATION AND AGREEMENT TO RECORD PRESERVATION AND RESERVATION OF RIGHTS

1. The United States Environmental Protection Agency ("EPA") agrees and acknowledges that the terms of Order RCRA-____-____ entered into by Respondent and EPA on _____, 19____ ("Order"), including any additional tasks determined by EPA to have been required pursuant to the Order, but excluding Section XVI (Record Preservation), have been satisfactorily completed based upon the information presently available to EPA.

2. Respondent agrees and acknowledges that the terms of Section XVI (Record Preservation) remain in effect until _____. [Insert date 6 years after termination of Order.]

3. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not limit or otherwise preclude EPA from taking additional enforcement action pursuant to Section 3008(h) of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the Hazardous and Solid Waste Amendments, ("RCRA"), 42 U.S.C. § 6928(h), or other available legal authorities, should EPA determine that such actions are warranted.

4. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

IT IS SO AGREED AND ACKNOWLEDGED:

Date: _____ By: _____
[NAME]
[TITLE]
[RESPONDENT]

Date: _____ By: _____
[NAME]
[REGIONAL ADMINISTRATOR OR
DELEGATEE]
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION VII

XXIX. SURVIVABILITY/PERMIT INTEGRATION

124. Except as otherwise expressly provided in this Section, this Order shall survive the issuance or denial of a RCRA permit for the facility, and this Order shall continue in full force and effect after either the issuance or denial of such permit. Accordingly, Respondent shall continue to be liable for the performance of obligations under this Order notwithstanding the issuance or denial of such permit. If the Facility is issued a RCRA permit and that permit expressly incorporates all or a part of the requirements of this Order, or expressly states that

its requirements are intended to replace some or all of the requirements of this Order, Respondent may request a modification of this Order and shall, with EPA approval, be relieved of liability under this Order for those specific obligations.

XXX. EFFECTIVE DATE

125. This Order shall become effective upon receipt by Respondent of a fully executed copy of this Order.

XXXI. SIGNATURE BY PARTIES

126. Each party to this Order shall execute this Order by signing the appropriate signature line.

IT IS SO AGREED:

For the United States Environmental Protection Agency:

BY: Jennifer G. MacDonald

Jennifer G. MacDonald
Assistant Regional Counsel
Region VII

United States Environmental Protection Agency

DATE: Sept. 30, 1994

The representative of Respondent who has signed the signature page certifies that he is fully authorized to enter into the terms and conditions of this Order and to bind the party he represents to this document.

For Industrial Service Corporation:

BY: Robert L. Lehr

Name: Robert L. Lehr
Title: Vice President

DATE: 9/29/94

Administrative Order on Consent for Corrective Action
In the Matter of Industrial Services Corporation.
Docket No. VII-94-H-0024.

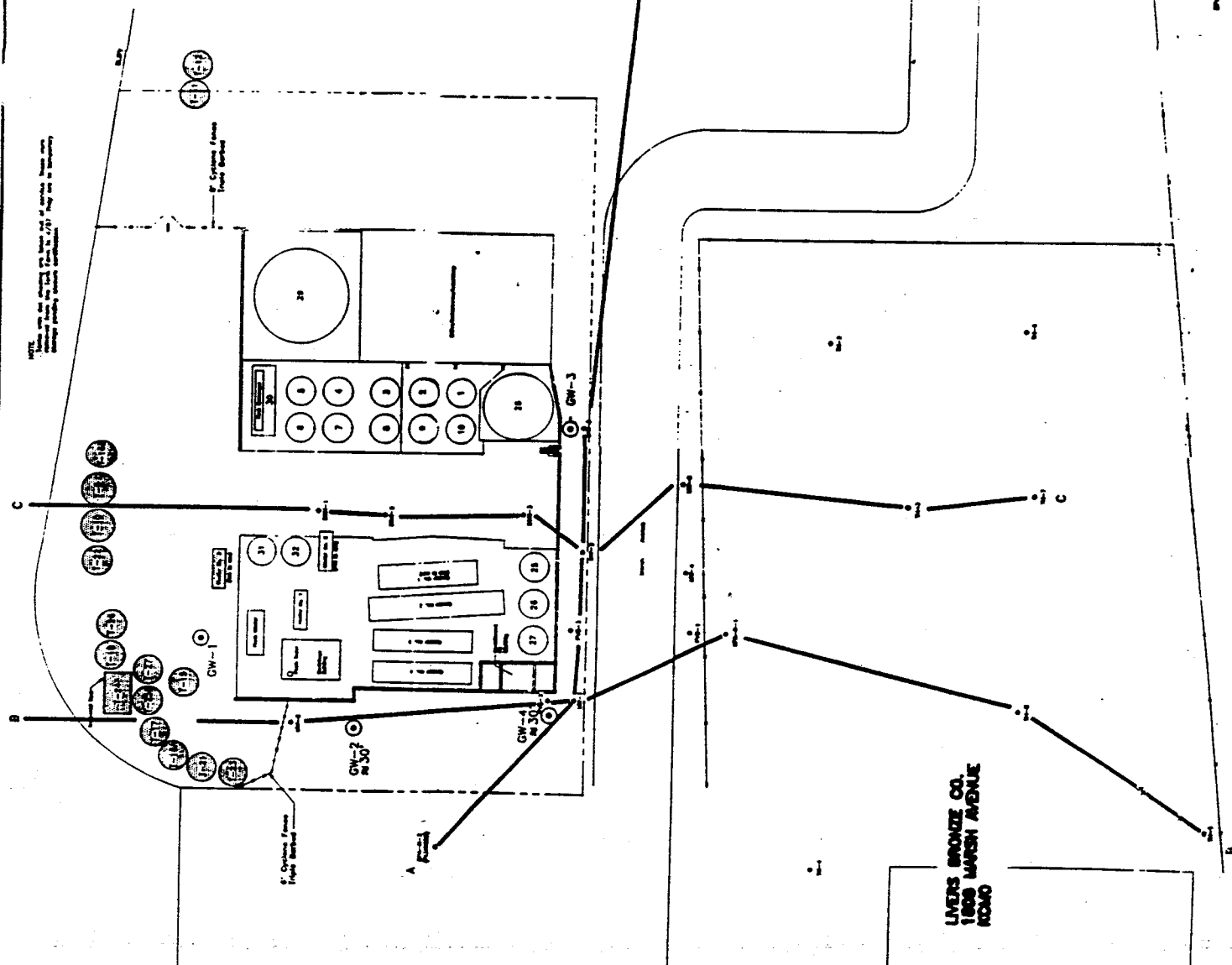
IT IS SO ORDERED:

BY: Charles P. Hensley for

DATE: 9/30/94

Michael J. Sanderson
Acting Director,
Waste Management Division
Region VII
United States Environmental Protection Agency

INDUSTRIAL SERVICE CORP.
1633 MARSH AVE.
KANSAS CITY, MO 64126



EXPLANATION

- EXISTING WELL, CONTROLLED BY OWNER (1960)
- EXISTING WELL, CONTROLLED BY OWNER (1960)
- EXISTING WELL, CONTROLLED BY OWNER (1960)
- EXISTING WELL, CONTROLLED BY OWNER (1960)

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at
Industrial Service Corporation
1633 South Marsh
Kansas City, MO 64126

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ATTACHMENT II

Scope of Work for a RCRA Facility Investigation ("RFI")

at

INDUSTRIAL SERVICE CORPORATION
1633 South Marsh
Kansas City, MO 64126
EPA I.D.# MOD073027609

TASK I: Description of Current Conditions Report

Respondent shall submit for EPA approval, a Description of Current Conditions ("DCC") report providing the background information pertinent to the Facility, contamination, and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included in the DCC report.

Facility Background:

1. Respondent's DCC report shall summarize the regional location, pertinent boundary features, general Facility physiography, hydrogeology, geological setting, and historical use of the Facility for the treatment, storage or disposal of solid and hazardous waste. Respondent's DCC report shall include:

A. Maps depicting the following:

1. General geographic location;
2. Property lines, with the owners of all adjacent property clearly indicated;
3. Topography and surface drainage (with a contour interval of 5 feet and a scale 1 inch = 100 feet) depicting all waterways, wetlands, floodplains, water features, drainage patterns, and surface-water containment areas;
4. All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
5. All solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980;

6. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;
7. All known past and present product and waste underground tanks and piping;
8. Surrounding land uses (residential, commercial, agricultural, recreational);
9. The location of all production and groundwater monitoring wells within a 1 (one) mile radius of the Facility. These wells shall be clearly labeled, and ground and top of casing elevations, construction details, and well logs included (elevations, construction details, and well logs may be included as an attachment); and
10. The location of all springs and seeps within a $\frac{1}{4}$ mile radius of the Facility.

All maps shall be consistent with the requirements set forth in 40 C.F.R. § 270.14 and be of sufficient detail and accuracy to locate and report all current and future work performed at the site.

- B. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the Facility;
- C. Approximate dates and periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response; and
- D. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the facility and related to the objectives of the Order.

Nature and Extent of Contamination:

1. Respondent's DCC report shall summarize all possible areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, Respondent shall identify the following:

- A. Location of unit/area (which shall be depicted on a Facility map);
 - B. Quantities of solid and hazardous wastes released or suspected to have been released;
 - C. Hazardous waste or constituents, to the extent known; and
 - D. Identification of areas where additional information is necessary.
2. Respondent shall prepare an assessment and description of the degree and extent of contamination, based upon information collected to date. This should include:
- A. All available monitoring data and qualitative information on locations and levels of contamination at the Facility both onsite and offsite;
 - B. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and
 - C. The potential impact(s) on human health and the environment, including demography, groundwater and surface water use, and land use.
3. Respondent's report shall include the following information for releases to groundwater:
- A. Identification of all wells (municipal, domestic, agricultural, industrial, etc.) within a one (1) mile radius of the Facility, including a summary of the most recent water sampling data available for any identified municipal or domestic supply wells;
 - B. A well inventory table that lists the following items for each identified well:
 - 1. Well designation;
 - 2. State I.D.;
 - 3. Reported owner;
 - 4. Driller;
 - 5. Date of completion;

6. Original use of well;
 7. Current use of well;
 8. Drilling method;
 9. Borehole diameter (inches);
 10. Casing Diameter (inches);
 11. Perforated interval (feet);
 12. Gravel pack interval (feet);
 13. Total well depth (feet);
 14. Depth to water (feet below ground surface); and
 15. Date of water level measurement.
- C. A regional map showing the Facility, groundwater flow direction, and the location of all identified wells within a one (1) mile radius of the Facility;
- D. Identification and description of any potential groundwater discharges to surface water bodies; and
- E. Identification and listing of all relevant and applicable water standards for the protection of human health and the environment (e.g., maximum contaminant levels, water quality standards, etc.).
4. Respondent's report shall contain the following for releases to surface water:
- A. Description of the potential beneficial uses of the surface water (e.g., drinking water supply, recreational, agricultural, industrial, or environmentally sensitive);
- B. Identification of all water supply intake points and contact areas within a one (1) mile downslope, downgradient, and/or downstream from the Facility. Include a summary of the most recent water sampling data available for each of the identified water supply intake points;
- C. A description of the biota in surface water bodies on, adjacent to, or which can be potentially affected by the release;
- D. A summary of any available sediment sampling data; and

- E. A regional map showing the Facility, surface water flow direction, beneficial use areas, and the location of any identified water supply intake points within a one (1) mile radius of the Facility.

TASK II: Pre-Investigation Evaluation of Corrective Measures Technologies

Prior to starting the facility investigation, Respondent shall submit to EPA a report that identifies the potential corrective measures technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. This report shall also identify any field data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of wastes and construction of materials, information to evaluate effectiveness, treatability of wastes, etc.).

TASK III: RFI Workplan Requirements

Respondent shall prepare a RFI Workplan. This RFI Workplan shall include the development of several plans, which shall be prepared concurrently. During the RFI, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the Facility specific situation. The RFI Workplan includes the following:

Project Management Plan:

1. Respondent shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

Data Collection Quality Assurance Plan:

1. Respondent shall prepare a Data Collection Quality Assurance Plan to document all monitoring procedures: sampling, field measurements and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.
 - A. Data Collection Strategy: The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

1. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;
2. Description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurement data;
3. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Examples of factors which shall be considered and discussed include:
 - a) Environmental conditions at the time of sampling;
 - b) Number of sampling points;
 - c) Representativeness of selected media; and
 - d) Representativeness of selected analytical parameters.
4. Description of the measures to be taken to assure that the following data sets can be compared to each other:
 - a) RFI data generated by Respondent over some time period;
 - b) RFI data generated by an outside laboratory or consultant versus data generated by Respondent;
 - c) Data generated by separate consultants or laboratories; and
 - d) Data generated by an outside consultant or laboratory over some time period.
5. Details relating to the schedule; and information to be provided in quality assurance reports. The reports should include but not be limited to:
 - a) Periodic assessment of measurement data accuracy, precision and completeness;
 - b) Results of performance audits;

- c) Results of system audits;
 - d) Significant quality assurance problems and recommended solutions; and
 - e) Resolutions of previously stated problems.
- B. The sampling section of the Data Collection Quality Assurance Plan shall discuss:
- 1. Selecting appropriate sampling locations, depths, etc.;
 - 2. Providing a statistically sufficient number of sampling sites;
 - 3. Measuring all necessary ancillary data;
 - 4. Determining conditions under which sampling should be conducted;
 - 5. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);
 - 6. Determining which parameters are to be measured and where;
 - 7. Selecting the frequency of sampling and length of sampling period;
 - 8. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;
 - 9. Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;
 - 10. Documenting field sampling operations and procedures, including:
 - a) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and adsorbing reagents);
 - b) Procedures and forms for recording the exact location and specific considerations associated with sample acquisition;
 - c) Documentation of specific sample preservation methods;

- d) Calibration of field devices;
 - e) Collection of replicate samples;
 - f) Submission of field-biased blanks, where appropriate;
 - g) Potential interferences present at the Facility;
 - h) Construction materials and techniques associated with monitoring wells and piezometers;
 - i) Field equipment listing and sample containers;
 - j) Sampling order; and
 - k) Decontamination procedures.
- 11. Selecting appropriate sample containers;
 - 12. Sample preservation; and
 - 13. Chain-of-custody, including:
 - a) Standardized field tracking and reporting forms to establish sample custody in the field prior to and during shipment; and
 - b) Pre-prepared sample labels containing all information necessary for effective sample tracking.

C. The field measurements section of the Data Collection Quality Assurance Plan shall discuss:

- 1. Selecting appropriate field measurement locations, depths, etc.;
- 2. Providing a statistically sufficient number of field measurements;
- 3. Measuring all necessary ancillary data;
- 4. Determining conditions under which field measurements should be conducted;
- 5. Determining which media are to be addressed by appropriate field measurements (e.g., groundwater,

air, soil, sediment, etc.);

6. Determining which parameters are to be measured and where;
7. Selecting the frequency of field measurements and length of field measurement period; and
8. Documenting field measurement operations and procedures, including:
 - a) Procedures and forms for recording raw data and the exact location, time and Facility-specific considerations associated with the data acquisition;
 - b) Calibration of field devices;
 - c) Collection of replicate measurements;
 - d) Submission of field-biased blanks, where appropriate;
 - e) Potential interferences present at the Facility;
 - f) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;
 - g) Field equipment listing;
 - h) Order in which field measurements were made; and
 - i) Decontamination procedures.

D. The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

1. Chain-of-custody procedures, including:
 - a) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipments, and verify the data entered onto the sample custody records;
 - b) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

- c) Specification of laboratory sample custody procedures for sample handling, storage and dispersement for analysis.
- 2. Sample storage procedures and storage times;
- 3. Sample preparation methods;
- 4. Analytical procedures, including:
 - a) Scope and application of the procedure;
 - b) Sample matrix;
 - c) Potential interferences;
 - d) Precision and accuracy of the methodology; and
 - e) Method detection limits.
- 5. Calibration procedures and frequency;
- 6. Data reduction, validation and reporting;
- 7. Internal quality control checks, laboratory performance and system audits and frequency, including:
 - a) Method blank(s);
 - b) Laboratory control sample(s);
 - c) Calibration check sample(s);
 - d) Replicate sample(s);
 - e) Matrix-spiked sample(s);
 - f) "Blind" quality control sample(s);
 - g) Control charts;
 - h) Surrogate samples;
 - i) Zero and span gases; and
 - j) Reagent quality control checks.
- 8. Preventative maintenance procedures and schedules;
- 9. Corrective action (for laboratory problems); and

10. Sample turnaround time.

Data Management Plan:

1. Respondent shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

A. The data record shall include the following:

1. Unique sample or field measurement code;
2. Sampling or field measurement location and sample or measurement type;
3. Sampling or field measurement raw data;
4. Laboratory analysis ID number;
5. Property or component measured; and
6. Results of analysis (e.g., concentration).

B. The following data shall be presented in tabular displays:

1. Unsorted (raw) data;
2. Results for each medium, or for each constituent monitored;
3. Data reduction for statistical analysis;
4. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
5. Summary data.

C. The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.);

1. Display sampling location and sampling grids;
2. Indicate boundaries of sampling area and areas where more data are required;

3. Displays levels of contamination at each sampling location;
4. Display geographical extent of contamination;
5. Display contamination levels, averages, and maxima;
6. Illustrate changes in concentration in relation to distance from the source, time, depth or other parameters; and
7. Indicate features affecting intramedia transport and show potential receptors.

Health and Safety Plan

1. Respondent shall prepare a Health and Safety Plan for RFI activities.
 - A. Major elements of the Health and Safety Plan shall include:
 1. Facility description including availability of resources such as roads, water supply, electricity and telephone service;
 2. Description of the known hazards and evaluate the risks associated with the incident and with each activity conducted;
 3. A listing of key personnel and alternates possible for site safety, response operations, and for protection of public health;
 4. Delineation of work areas;
 5. Description of levels of protection to be worn by personnel in work areas;
 6. Establishment of procedures to control site access;
 7. Description of decontamination procedure for personnel and equipment;
 8. Establishment of site emergency procedures;
 9. Emergency medical care for injuries and toxicological problems;
 10. Description of requirements for an environmental

surveillance program;

11. Routine and special training required for responders; and
 12. Establishment of procedures for protecting workers from weather-related problems.
- B. The Facility Health and Safety Plan shall be consistent with:
1. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
 2. EPA Order 1440.1 - Respiratory Protection;
 3. EPA Order 1440.3 - Health and Safety Requirements for Employees Engaged in Field Activities;
 4. Facility Contingency Plan;
 5. EPA Standard Operating Safety Guide (1984);
 6. OSHA regulations particularly in 29 CFR 1910 and 1926; and
 7. State and local regulations.

Community Relations Plan:

1. Respondent shall prepare a Community Relations Plan for the dissemination of information to the public regarding investigation of activities and results.

TASK IV: Facility Investigation

Respondent shall conduct those investigations necessary to: characterize the Facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of contamination on and off-site (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to support the development and evaluation of corrective measure alternative or alternatives during the Corrective Measures Study.

Environmental Setting:

1. Respondent shall collect information to supplement and verify existing information on the environmental setting at

the Facility. Respondent shall characterize the following:

A. Respondent shall conduct a program to evaluate hydrogeologic conditions at the Facility. This program shall provide the following information:

1. A description of the regional and Facility specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the Facility, including:
 - a. Regional and Facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
 - b. Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);
 - c. Depositional history;
 - d. Identification and characterization of areas and amounts of recharge and discharge;
 - e. Regional and Facility specific groundwater flow patterns; and
 - f. Characterize seasonal variations in the groundwater flow regime.
2. An analysis of any topographic features that might influence the groundwater flow system.
3. Based on field data, tests and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the Facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:
 - a. Hydraulic conductivity and porosity (total and effective);
 - b. Lithology, grain size, sorting, degree of cementation;
 - c. An interpretation of hydraulic interconnections between saturated zones; and
 - d. The attenuation capacity and mechanisms of the natural earth materials (i.e., ion

exchange capacity, organic carbon content, mineral content, etc.).

4. Based on field studies and cores, structural geology and hydrogeologic cross-sections showing the extent (i.e., depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:
 - a. Sand and gravel deposits in unconsolidated deposits;
 - b. Zones of fracturing or channeling in consolidated or unconsolidated deposits;
 - c. Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;
 - d. The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs; and
 - e. Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.
5. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:
 - a. Water level contour and/or potentiometric maps;
 - b. Hydrologic cross-sections showing vertical gradients;
 - c. The flow system, including the vertical and horizontal components of flow; and
 - d. Any temporal changes in hydraulic gradients (e.g., tidal or seasonal influences).
6. A description of man-made influences that may affect the hydrogeology of the site, identifying:
 - a. Active and inactive local water supply and production wells with an approximate schedule

of pumping; and

- b. Man-made hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

B. Respondent shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include but not be limited to, the following information:

1. SCS soil classification;
2. Surface soil distribution;
3. Soil profile, including ASTM classification of soils;
4. Transects of soil stratigraphy;
5. Hydraulic conductivity (saturated and unsaturated);
6. Relative permeability;
7. Bulk density;
8. Porosity;
9. Soil sorptive capacity;
10. Cation exchange capacity (CEC);
11. Soil organic content;
12. Soil pH;
13. Particle size and distribution;
14. Depth of water table;
15. Moisture content;
16. Effect of stratification on unsaturated flow;
17. Infiltration;
18. Evapotranspiration;
19. Storage capacity;

- 20. Vertical flow rate; and
 - 21. Mineral content.
- C. Respondent shall conduct a program to characterize the surface water bodies in the vicinity of the Facility likely to be affected by releases from the Facility. Such characterization shall include, but not be limited to, the following activities and information:
- 1. Description of the temporal and permanent surface water bodies including:
 - a. For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of the impoundment.
 - b. For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations and flooding tendencies (i.e., 100 year event);
 - c. Drainage patterns;
 - d. Evapotranspiration; and
 - e. Proposed, significant, channel modifications.
 - 2. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contamination concentrations, etc.
 - 3. Description of sediment characteristics including:
 - a. Deposition area;
 - b. Thickness profile; and
 - c. Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).
- D. Respondent shall provide information characterizing the climate in the vicinity of the Facility. Such information shall include, but not be limited to:

1. A description of the following parameters:
 - a. Annual and monthly rainfall averages;
 - b. Monthly temperature averages and extremes;
 - c. Wind speed and direction;
 - d. Relative humidity/dew point;
 - e. Atmospheric pressure;
 - f. Evaporation data;
 - g. Climate extremes that have been known to occur in the vicinity of the Facility, including frequency of occurrence.

Source Characterization:

1. Respondent shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, disposed, collected or removed, including: type; quantity; physical form; disposition; and Facility characteristics affecting releases (engineered barriers etc.). This shall include quantification of the following specific characteristics, at each source area:

A. Unit/Disposal Area Characteristics:

1. Location of unit/disposal area;
2. Type of unit/disposal area;
3. Design features;
4. Operating practices (past and present);
5. Period of operation;
6. Age of unit/disposal area;
7. General physical condition; and
8. Method used to close the unit/disposal area.

B. Waste Characteristics:

1. Type of waste placed in the unit;
 - a. Hazardous waste classification (e.g., ignitable, corrosive, Toxicity

- Characteristic);
 - b. Quantity; and
 - c. Chemical composition.
2. Physical and chemical characteristics;
- a. Physical form (solid, liquid, gas);
 - b. Physical description (e.g., powder, oily sludge);
 - c. Temperature;
 - d. pH;
 - e. General chemical class (e.g., acid, base, solvent);
 - f. Molecular weight;
 - g. Density;
 - h. Boiling point;
 - i. Viscosity;
 - j. Solubility in water;
 - k. Cohesiveness of the waste;
 - l. Vapor pressure; and
 - m. Flashpoint.
3. Migration and dispersal characteristics of the waste:
- a. Sorption;
 - b. Biodegradability, bioconcentration, biotransformation;
 - c. Photodegradation rates;
 - d. Hydrolysis rates; and
 - e. Chemical transformation.

Respondent shall document the procedures used in making the above determinations.

Contamination Characterization:

1. Respondent shall collect analytical data on groundwater, soils, surface water and sediment contamination in the vicinity of the Facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, and conditions during sampling and the identity of the individuals performing the sampling and analysis. Respondent shall address the following types of contamination at the Facility:
 - A. Respondent shall conduct a Groundwater Investigation to characterize any plumes of contamination at the Facility. This investigation at a minimum will provide the following information:
 1. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility;
 2. The horizontal and vertical direction of contamination movement;
 3. The velocity of contaminant movement;
 4. The horizontal and vertical concentration profiles of 40 CFR Part 261, Appendix VIII constituents in the plume(s);
 5. An evaluation of factors influencing the plume movement; and
 6. An extrapolation of future contaminant movement.

Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc).

- B. Respondent shall conduct an investigation to characterize the contamination of soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall provide the following information:
 1. A description of the horizontal and vertical extent of contamination;
 2. A description of contaminant and soil chemical properties within the contaminant source area and

plume. This shall include contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation.

3. Specific contaminant concentrations;
4. The velocity and direction of contaminant movement; and
5. An extrapolation of future contaminant movement.

Respondent shall document the procedures used in making the above determinations.

C. Respondent shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the Facility. The investigation shall include but not be limited to, the following information:

1. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility, and the extent of contamination in underlying sediments;
2. The horizontal and vertical direction of contaminant movement;
3. The contaminant velocity;
4. An evaluation of the physical, biological and chemical factors influencing contaminant movement;
5. An extrapolation of future contaminant movement; and
6. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

Respondent shall document the procedures used in making the above determinations.

Potential Receptors:

1. Respondent shall collect data describing the human populations and environmental systems that are susceptible to exposure from contaminant releases from the Facility. Chemical analysis of biological samples may be needed. Data

on observable effects in ecosystems may also be obtained. The following characteristics shall be identified:

- A. Local uses and possible future uses of groundwater:
 - 1. Type of use (e.g., drinking water source, municipal or residential, agricultural, domestic/non-potable and industrial); and
 - 2. Location of groundwater users including wells and discharge areas.
- B. Local uses and possible future uses of surface waters draining the Facility:
 - 1. Domestic and municipal (e.g., potable and lawn/gardening watering);
 - 2. Recreational (e.g., swimming, fishing);
 - 3. Agricultural;
 - 4. Industrial; and
 - 5. Environmental (e.g., fish and wildlife propagation).
- C. Human use of or access to the Facility and adjacent lands, including but not limited to:
 - 1. Recreation;
 - 2. Hunting;
 - 3. Residential;
 - 4. Commercial;
 - 5. Zoning; and,
 - 6. Relationship between population locations and prevailing wind direction.
- D. A description of the biota in surface water bodies on, adjacent to, or affected by the Facility.
- E. A description of the ecology overlying and adjacent to the Facility.
- F. A demographic profile of the people who use or have access to the Facility and adjacent land, including but not limited to: age, sex, and sensitive subgroups.

- G. A description of any endangered or threatened species at or near the Facility.

TASK V: Investigation Analysis

Respondent shall prepare an analysis and summary of all Facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human and/or the environment, and to support the Corrective Measures Study.

Data Analysis:

1. Respondent shall analyze all Facility investigation data outlined in Task IV and prepare a report on the type and extent of contamination at the Facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area.

Protection Standards:

1. For hazardous and solid waste management units at the Facility, Respondent shall provide information to support EPA's selection/development of groundwater protection standards for all Appendix IX constituents found at the Facility during the RFI.
 - a. The Groundwater Protection Standards shall consist of:
 1. For any constituents listed in Table 1 of 40 C.F.R. section 264.94, the respective value given in that table (MCL) if the background level is below that given in Table 1; or
 2. The background level of that constituent in the groundwater; or
 3. An EPA approved Alternate Concentration Limit (ACL).
 - b. Information to support the Agency's subsequent selection of Alternate Concentration Limits (ACL's) shall be developed by Respondent in accordance with EPA guidance. For any proposed ACL's, Respondent shall include a justification based upon the criteria set forth in 40 C.F.R. § 264.94 (b).
 - c. After receipt of any proposed ACL's, EPA shall notify

Respondent in writing of approval, disapproval, or modifications. EPA shall specify in writing the reason(s) for any disapproval or modification.

- d. Within thirty (30) days of receipt of EPA's notification or disapproval of any proposed ACL, Respondent shall amend and submit revisions to EPA.
2. Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, federally approved state water quality standards, etc.).

TASK VI: Laboratory and Bench Scale Studies

If requested by EPA, Respondent shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to Facility conditions. Within thirty (30) days of receiving written request from EPA, Respondent shall develop a workplan identifying the type(s) and goal(s) of the study(ies), the level of effort needed and the procedure to be used for data management and interpretation. Respondent shall analyze the technologies, based on literature review, vendor contacts, and past experience to determine the testing requirements.

Respondent shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

Respondent shall prepare a report summarizing the testing program and its results, both positive and negative.

TASK VII: Reports

Preliminary and Workplan:

1. Respondent shall submit to EPA reports on Tasks I and II when it submits the RCRA Facility Investigation Workplan (Task III).

Progress:

2. Respondent shall at a minimum provide EPA with signed

monthly progress reports containing:

- A. A description and estimate of the percentage of the RFI completed;
- B. Summaries of all findings;
- C. Summaries of all changes made in the RFI during the reporting period;
- D. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;
- E. Summaries of all problems or potential problems encountered during the reporting period;
- F. Actions being taken to rectify problems;
- G. Changes in personnel during the reporting period;
- H. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Draft and Final:

1. Upon EPA approval, Respondent shall prepare a RFI Report to present Tasks IV-V. The RFI Report shall be developed in draft form for EPA review. The RFI Report shall be developed in final format incorporating comments received on the Draft RFI Report.
2. Four (4) copies of all reports, including the Task I report, Task II report, Task III workplan, both the Draft and Final RFI Reports (Tasks IV-V), and the Task VI report if required, shall be provided by Respondent to EPA.
3. Four (4) copies of all reports, including the Task I report, Task II report, Task III workplan, both the Draft and Final RFI Reports (Tasks IV-V), and the Task VI report if required, shall be provided by Respondent to Mr. Tom Judge, Missouri Department of Natural Resources, Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri, 65102.

Schedule for Report Submittal:

1. Respondent shall develop and submit the following reports and workplans in accordance with the schedule below:

Facility Submittal

Due Date

Description of Current Conditions
(Task I)

75 calendar days
from the effective
date of this Order.

Pre-Investigation Evaluation
Corrective Measures Technologies
(Task II)

90 calendar days of
from the effective
date of this Order.

RFI Workplan (Task III)

90 calendar days
from the effective
date of this Order.

Draft RFI Report (Tasks IV and V)

According to the
schedule contained
in the RFI Workplan.

Final RFI Report (Tasks IV and V)

30 calendar days
from receipt of EPA
comments on the
Draft RFI Report.

Treatability Studies Workplan

30 calendar days
from receipt of
written EPA request

Laboratory and Bench Scale Studies
(Task VI)

30 calendar days
from receipt of
written EPA request.
If a Treatability
Studies Workplan is
requested, the
schedule for the
submittal of the
Laboratory and
Bench Scale Study
shall be included in
the Workplan.

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at
Industrial Service Corporation
1633 South Marsh
Kansas City, MO 64126

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Attachment III

Scope of Work for a Corrective Measures Study
at
INDUSTRIAL SERVICE CORPORATION
1633 South Marsh
Kansas City, MO 64126
EPA I.D.# MOD0730Z7609

TASK VIII: Identification and Development of the Corrective Measure Alternative or Alternatives

Based on the results of the RFI and consideration of the identified preliminary Corrective Measure Technologies (Task II), Respondent shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

Description of Current Situation:

1. Respondent shall submit an update to the information describing the current situation at the Facility and the known nature and extent of contamination as documented by the RFI Report. Respondent shall provide an update to information presented in Task I of the RFI to the EPA regarding previous response activities and any interim measures which have or are being implemented at the Facility. Respondent shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

Establishment of Corrective Action Objectives:

1. Respondent, in conjunction with the EPA, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA Guidance, and the requirements of any applicable federal statutes. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR 264.100.

Screening of Corrective Measure Technologies:

1. Respondent shall review the results of the RFI and reassess the technologies specified in the Task II report as approved by EPA and identify additional technologies which are

applicable at the Facility. Respondent, shall screen the preliminary corrective measures technologies identified in Task II of the RFI and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which may impact corrective measures technology screening are described in more detail below:

- A. Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.
- B. Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration.
- C. During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

Identification of the Corrective Measure Alternative or Alternatives:

1. Respondent shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task II of the RFI and as supplemented following the preparation of the RFI Report. Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately

address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. Respondent shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

**TASK IX: Evaluation of the Corrective Measure
Alternative or Alternatives**

Respondent shall describe each corrective measure alternative that passes through the Initial Screening in Task VII and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. Respondent shall also develop cost estimates for each corrective measure.

Technical/Environmental/Human Health/Institutional:

1. Respondent shall provide a description of each corrective measure alternative which includes but is not limited to the following: preliminary process flow sheets, preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. Respondent shall evaluate each alternative in the following areas:
 - A. Respondent shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.
 1. Respondent shall evaluate performance based on the effectiveness and useful life of the corrective measure:
 - a. Effectiveness shall be evaluated in terms of ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluations should also consider the effectiveness of combinations of technologies; and
 - b. Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be

slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

2. Respondent shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:
 - a. Operations and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and
 - b. Demonstrated and expected reliability as a way of measuring the risk and effect of failure. Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
3. Respondent shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:
 - a. Constructability is determined by the conditions both internal and external to the Facility conditions and include such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the Facility

(i.e., remote location vs. congested urban area). Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

b. Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, preestablished level.

4. Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

B. Respondent shall perform an environmental assessment for each alternative. The environmental assessment shall focus on the Facility conditions and pathways of contamination actually addressed by each alternative. The environmental assessment for each alternative will include, at a minimum, an evaluation of: The short- and long-term beneficial and adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

C. Respondent shall assess each alternative in terms of the extent of which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

- D. Respondent shall assess relevant institutional needs for each alternative. Specifically, the effects of federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

Cost Estimate:

1. Respondent shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

- A. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

1. Direct and capital costs include:

- a. Construction costs: Costs of materials, labor, and equipment required to install the corrective measure.
- b. Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the corrective action; these materials remain until the corrective action is complete.
- c. Land and site development costs: Expenses associated with the purchase of land and development of existing property; and
- d. Buildings and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

2. Indirect capital costs include:

- a. Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;
- b. Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
- c. Startup and shakedown costs: Costs incurred

during corrective measure startup; and

- d. Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate Facility characterization.

B. Operation and Maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. Respondent shall consider the following operation and maintenance cost components:

1. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;
2. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;
3. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water, sewer service, and fuel;
4. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;
5. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plan residues, generated during operations;
6. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;
7. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;
8. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
9. Other costs: Items that do not fit any of the above categories.

TASK X: Justification and Recommendation of the Corrective Measure or Measures

Respondent shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. The EPA will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks IX and X. At a minimum, the following criteria will be used to justify the final corrective measure or measures:

Technical:

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will given preference.
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and Facility conditions similar to those anticipated will be given preference;
3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

Human Health:

1. The corrective measure or measures must comply with existing EPA criteria, standards, or guidelines for protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

Environmental:

1. The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be preferred.

TASK XI: Reports

Respondent shall prepare a Corrective Measures Study Report presenting the results of Tasks VIII through X and recommending a corrective measure alternative. Eight (8) copies of the preliminary report shall be provided by Respondent.

Progress:

1. Respondent shall at a minimum provide EPA with signed, monthly, progress reports containing:
 - A. A description and estimate of the percentage of the Corrective Measures Study completed;
 - B. Summaries of all findings;
 - C. Summaries of all changes made to the Corrective Measures Study during the reporting period;
 - D. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;
 - E. Summaries of all problems or potential problems encountered during the reporting period;
 - F. Actions being taken to rectify problems;
 - G. Changes in project personnel during the reporting period;
 - H. Projected work for the next reporting period; and
 - I. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Draft Report:

1. The report shall at a minimum include:
 - A. A description of the Facility:
 1. Site topographic map and preliminary layouts.
 - B. A summary of the corrective measure or measures;
 1. Description of the corrective measure or measures and rationale for selection;
 2. Performance expectations;

3. Preliminary design criteria and rationale;
 4. General operation and maintenance requirements;
and
 5. Long term monitoring requirements.
- C. A summary of the RFI and impact on the selected corrective measure or measures:
1. Field studies (groundwater, surface water, soil, air); and
 2. Laboratory studies (bench scale, pilot scale).
- D. Design and implementation precautions to include but not limited to:
1. Special technical problems;
 2. Additional engineering data required;
 3. Permits and regulatory requirements;
 4. Access, easements, right-of-way;
 5. Health and safety requirements; and
 6. Community relations activities.
- E. Cost estimates and schedules:
1. Capital cost estimate;
 2. Operation and maintenance cost estimate; and
 3. Project schedule (design, construction, operation).

Final Report:

1. Respondent shall finalize the Corrective Measures Study Report incorporating comments received from EPA on the Draft Corrective Measures Study Report.
2. Four (4) copies of all reports, including the Draft Corrective Measures Study Report (Tasks VII, IX, and X) and Final Corrective Measures Study Report (Tasks VII, XI, and X) shall be provided by Respondent to EPA.

3. Four (4) copies of all reports, including the Draft Corrective Measures Study Report (Tasks VII, XI and X) shall be provided by Respondent to Mr. Tom Judge, Missouri Department of Natural Resources, Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri, 65102.

Schedule for Report Submittal:

Respondent shall develop and submit the following reports in accordance with the schedule below:

Facility Submittal

Due Date

Draft Corrective Measures
Study Report (Tasks VIII, IX, and X)

45 days after submittal
of the Final RFI Report

Final Corrective Measures
Study Report (Tasks VIII, IX, and X)

30 days after receipt of
EPA comments on the
Draft Corrective
Measures Study Report